Use of NOAA 16 Operational Matchup files for AIRS Validation

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Why use NOAA-16?

NOAA-16 ECT is very similar to AQUA

NOAA-16 operational matchup files available every day.

Can compare AIRS/AMSU/HSB retrievals with ATOVS retrievals.

Can compare AIRS/AMSU/HSB radiances with ATOVS radiances.

Already implemented. (found 316 matches out of 351 NOAA-16 matchups - for May 25, 2001)
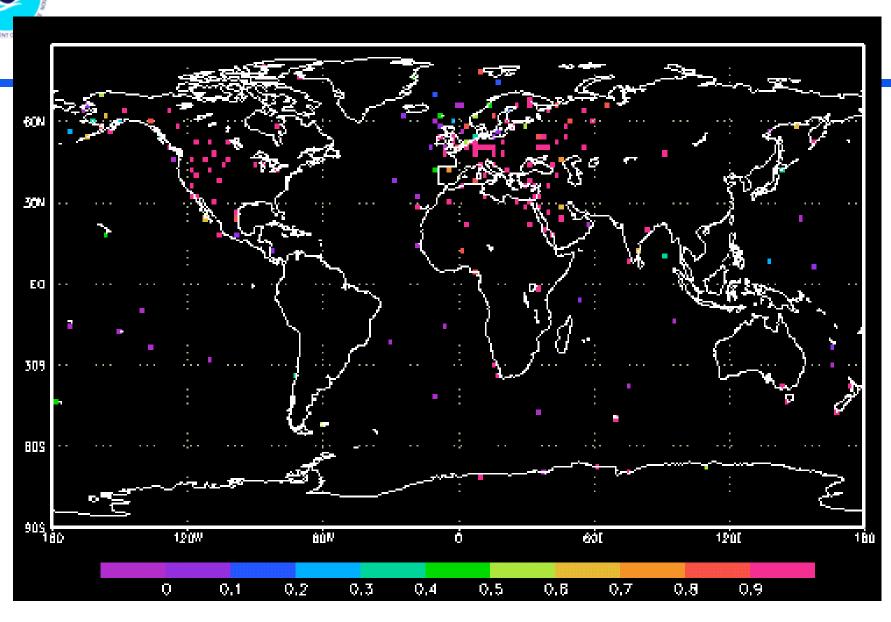
Contents of NOAA-16 matchup files.

18 MB files covers 5 days.

Geolocation

HIRS radiances, AMSU-A (no AMSU-B)

Retrievals (profiles, total ozone, cloud liquid water, skin temperature, cloud amount and pressure)

Surface type (sea,land,coast,ice,snow)
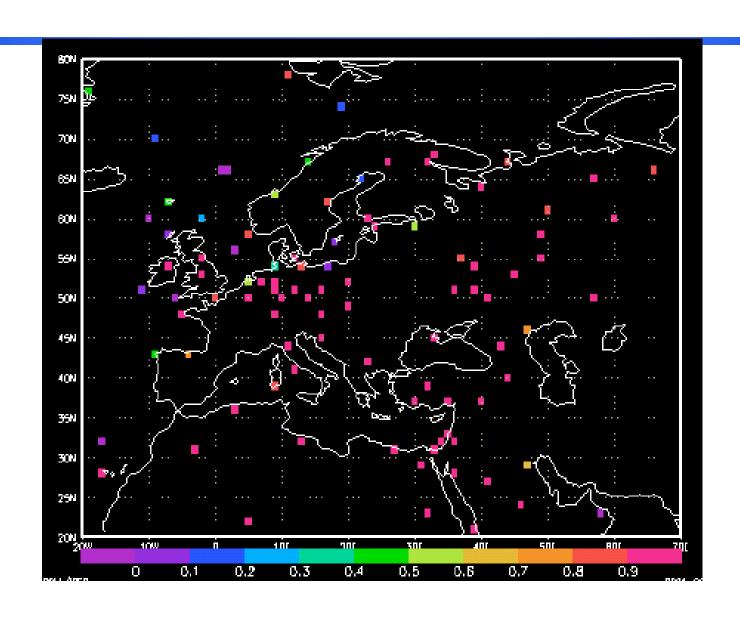
Forecast surface temperature and pressure.

Contents (continued)

Radiosonde data - station ID, balloon release time, quality flags, significant and standard levels, wind speed, etc.

Radiosonde profiles also interpolated to NESDIS 42 retrieval levels.
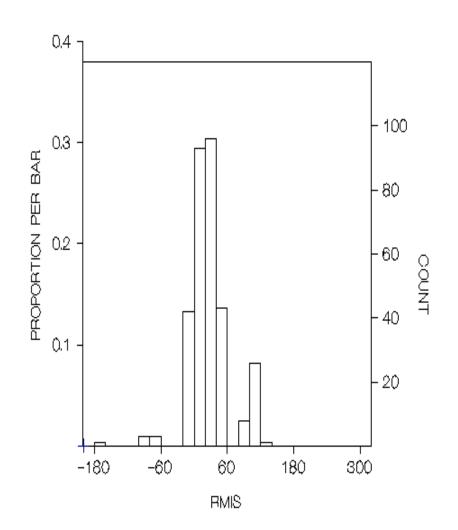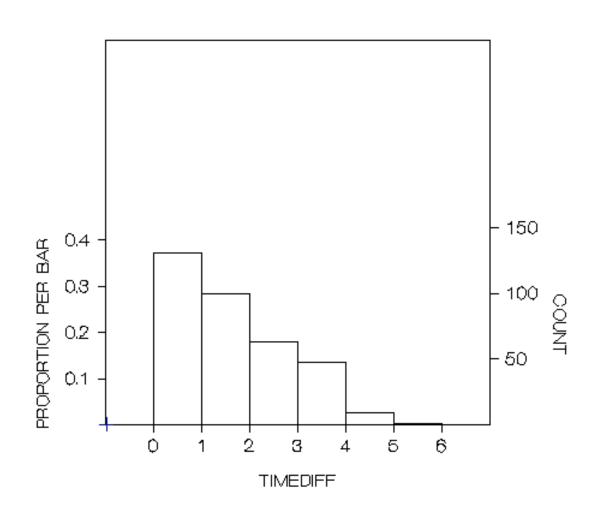
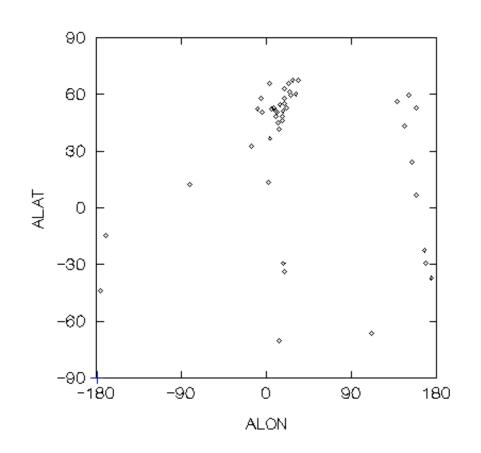# AIRS Matchups for MAY 25, 2001

Distance

Time Difference (Aqua-N16)
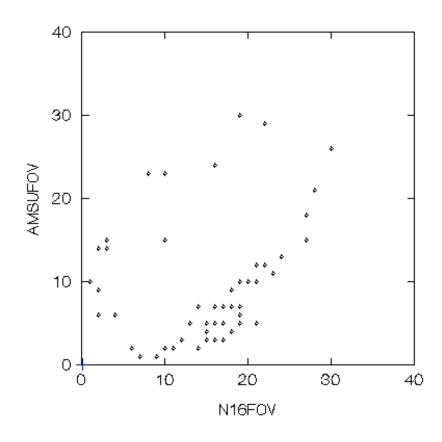
Raob time minus NOAA-16 (absolute)
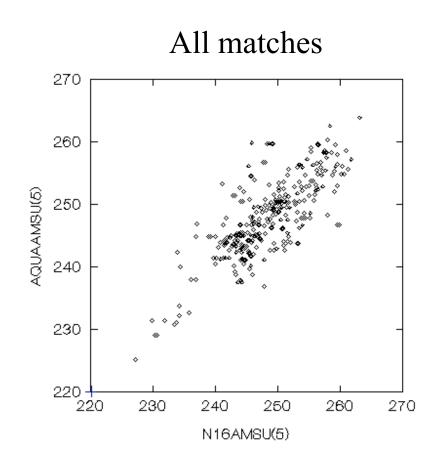
Time difference < 10 minutes (Aqua – NOAA16)
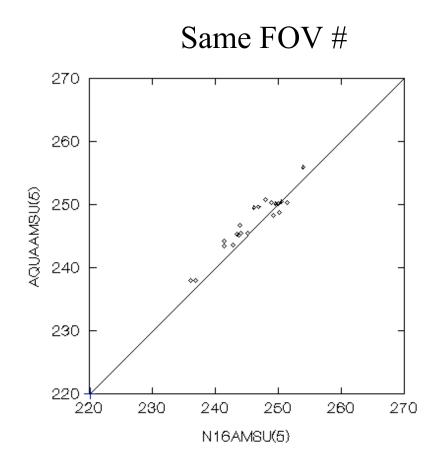
AQUA AMSU Channel 5 vs. NOAA-16

All matches

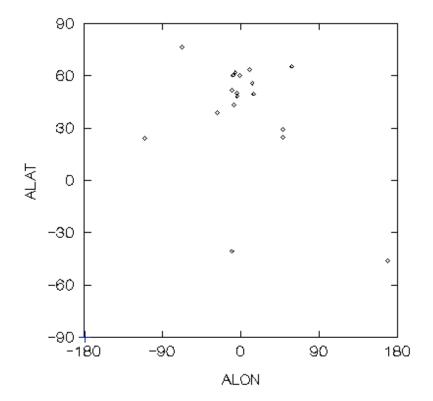## Same FOV #

SAME FOV
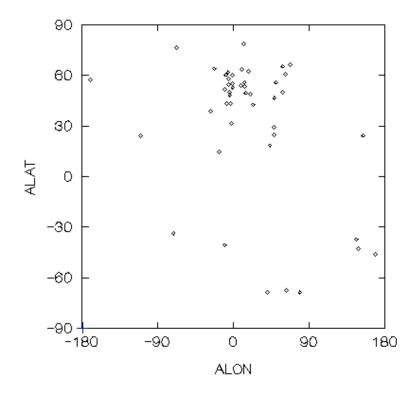
DIFF. of 1 FOV

NOAA AIRS Matchup System

GOAL

To create a system to matchup AIRS data to any other type of data.

Distribute the AIRS data for matchups.

Requirements

One input data format.

The matchup program will be run only once a day.

Unlimited number of matchup points (or files).

If a matchup exists, only the closest golf ball will be saved for each input point.

The output file will contain the input point and the matched AIRS/AMSU/HSB data (if one exists).

Input File

Ascii text file

Contains a list of points to be matched with the airs data.

An example matchup point consists of:

31.08   33.83 2001   6   12   0   7   100   180

Input File Format

Latitude

Longitude

Year

Month

Day

Hour

Minute

Maximum distance (km) for an AIRS matchup.

Maximum time (minutes) for an AIRS matchup.

Matchup Program

Reads in all the input files.

Reads in all the AIRS/AMSU/HSB Level-1B files (one granule at a time).

Compares each input point with the center field of view of each golf ball.

If a matchup exists and it is closer than an existing matchup, it is saved.

When all the Level-1B data is read, the output HDF files are written.

Output File

Input matchup point information

AIRS/AMSU/HSB data

Time separation in minutes between input matchup point and matched golf ball (time of the center field of view)

Distance separation in km between input matchup point and matched golf ball (distance to the center field of view)

Conclusion

Have the capability to match AIRS simulated data to any other type of data.

Will supply a reader for the output HDF matchup files (if requested).